

1 ***In-Situ* Oxidized Films for Use as Gap Layers**  
2 **for a Spin-Valve Sensor and Methods of Manufacture**  
3

4 **ABSTRACT OF THE INVENTION**

5 Disclosed is a spin-valve sensor disposed between first and second gap layers and  
6 formed of one or more *in-situ* oxidized films. The improved spin valve sensor helps  
7 eliminate electrical shorting between the spin-valve sensor and shield layers. A fabrication  
8 method of the gap layers comprises repeatedly depositing a metallic films on a wafer in a  
9 DC-magnetron sputtering module of a sputtering system, and then transferring the wafer in a  
10 vacuum to an oxidation module where *in-situ* oxidation is conducted. This deposition/*in-situ*  
11 oxidation process is repeated until a designed thicknesses of gap layers is attained. Smaller,  
12 more sensitive spin-valve sensors may be sandwiched between thinner gap layers formed of  
13 *in-situ* oxidized films, thus allowing for greater recording data densities in disk drive  
14 systems.  
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